

Having thus described the preferred embodiments, the invention is now claimed to be:

1. A vacuum cleaner comprising:

a housing defining a cyclonic airflow chamber for separating contaminants from a suction airstream, said housing further comprising an inlet for said cyclonic airflow chamber and an outlet for said cyclonic airflow chamber;

a nozzle base including a main suction opening, said main suction opening being fluidically connected with said cyclonic airflow chamber inlet;

an airstream suction source having an inlet disposed adjacent said cyclonic airflow chamber outlet and a suction source exhaust outlet spaced from said cyclonic airflow chamber, said suction source selectively establishing and maintaining an approximately linear suction airstream from said outlet of said cyclonic airflow chamber to said inlet of said airstream suction source; and,

a main filter assembly positioned between said cyclonic airflow chamber and said suction source for filtering contaminants from said suction airstream.

2. The vacuum cleaner as set forth in claim 1 wherein said main filter assembly comprises a filter element including a high-density polyethylene porous filter media which includes pores having an average pore size of approximately 45 μ m to approximately 90 μ m.

3. The vacuum cleaner as set forth in claim 1 wherein said filter element is approximately cylindrical in shape.

4. The vacuum cleaner as set forth in claim 3 wherein said filter element has a convoluted outer surface.

5 5. The vacuum cleaner as set forth in claim 1 wherein said cyclonic airflow chamber inlet is disposed tangentially adjacent an outer periphery of said cyclonic airflow chamber and said cyclonic airflow chamber outlet is parallel to a longitudinal axis of said cyclonic airflow chamber.

5 6. The vacuum cleaner as set forth in claim 1 further comprising a final filter assembly positioned on one of said housing and said nozzle base, said final filter assembly being in fluid communication with said suction source exhaust outlet for filtering said suction airstream exhausted from said suction source into the atmosphere.

7. The vacuum cleaner as set forth in claim 6 wherein said final filter assembly comprises a high efficiency particulate arrest (HEPA) filter media.

5 8. The vacuum cleaner as set forth in claim 1 wherein a lower portion of said cyclonic airflow chamber is defined by a dirt container for receiving and retaining dirt and dust separated from said suction airstream, said container being pivotable between an operative position and an open position, and including an open upper end defined by an inclined edge such that when said dirt container is pivoted fully into the open position, the inclined edge is located in a substantially horizontal plane to inhibit spillage of the separated dirt and dust.

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9. An upright vacuum cleaner comprising:
an upright housing section including a handle;
a nozzle base section hingedly interconnected
with the upright housing section, said nozzle base
5 section including a main suction opening formed in an
underside thereof;

a cyclonic airflow chamber defined in said
upright housing section for separating dust and dirt
from a suction airstream, said cyclonic airflow chamber
10 including an air inlet and air outlet;

a suction source located in one of said
upright housing section and said nozzle base section and
having a suction airflow inlet in fluid communication
with said cyclonic chamber outlet and a suction airflow
15 outlet;

a main filter assembly located between said
cyclonic airflow chamber and said suction source for
filtering residual dust and dirt from a suction
airstream as it flows through said cyclonic airflow dust
20 and dirt separating chamber; and,

wherein an inlet of said suction source is co-
linear with said cyclonic chamber outlet.

10. The upright vacuum cleaner as set forth
in claim 9 further comprising a final filter assembly
25 located on one of said housing and said nozzle base,
said final filter assembly being in fluid communication
with said suction airflow outlet of said suction source
for filtering said suction airstream exhausted by said
suction source prior to said suction airstream being
30 dispersed into the atmosphere and wherein said final
filter assembly comprises a high efficiency particulate
arrest (HEPA) filter media.

11. The upright vacuum cleaner as set forth in claim 9 wherein said main filter assembly comprises a filter element including porous high-density polyethylene foam filter media.

12. The upright vacuum cleaner as set forth in claim 11 wherein said porous filter media has pores with an average pore size of less than approximately 90 μ m.

13. The upright vacuum cleaner as set forth in claim 9 further comprising an interference plate on which a main filter of said main filter assembly is mounted.

14. The upright vacuum cleaner as set forth in claim 9 further comprising a dirt cup, wherein said cyclonic airflow chamber is defined within said dirt cup and between an interior wall thereof and an exterior wall of said main filter assembly.

15. A vacuum cleaner comprising:
a nozzle section;
a housing section connected to said nozzle section and in fluid communication with said nozzle section;
a dirt cup selectively mounted in said housing section;
a cyclonic airflow chamber located in said dirt cup for separating dirt and dust from a suction airstream flowing into said housing section between an inlet located adjacent a first end of said housing section and an outlet located adjacent a second end of said housing section;

a filter assembly located in said dirt cup,
15 said filter assembly comprising:
a filter rack, and
a first filter element mounted on said
filter rack.

16. The upright vacuum cleaner as set forth
20 in claim 15 further comprising a suction source having
an inlet located directly beneath said outlet of said
dirt cup.

17. The upright vacuum cleaner as set forth
in claim 15 wherein said cyclonic airflow chamber inlet
is located on a periphery of said dirt cup and said
cyclonic airflow chamber outlet is located along a
5 longitudinal axis of said dirt cup.

18. The upright vacuum cleaner as set forth
in claim 15 wherein said first filter element comprises
high density polyethylene porous filter media having an
average pore size of approximately 45 μ m to approximately
90 μ m.

19. The upright vacuum cleaner as set forth
in claim 15 further comprising a lid for selectively
covering said dirt cup.

20. The upright vacuum cleaner as set forth
in claim 15 further comprising a second filter chamber
disposed between said outlet of said housing section and
said inlet of said suction source and a second filter
5 element housed in said second filter chamber, for
filtering contaminants from said airstream exhausted
from said housing section.